

Title (en)  
Resonant-tunneling transistor.

Title (de)  
Transistor mit Resonanztunneleffekt.

Title (fr)  
Transistor à résonance tunnel.

Publication  
**EP 0226383 A2 19870624 (EN)**

Application  
**EP 86309383 A 19861202**

Priority  
JP 27080385 A 19851203

Abstract (en)  
A resonant-tunneling heterojunction bipolar transistor (RHBT) device, having a superlattice structure and a PN junction, includes an emitter layer (17), a base layer (14), a collector layer (13) operatively facing the base layer to form a PN junction at the face between the base layer and the collector layer, and a superlattice structure (16) including at least one quantum well defining a sub-band of energy at which carriers resonant-tunnel therethrough, formed at least in the emitter layer and operatively facing the base layer. The RHBT has differential negative resistance characteristics for realizing a variety of logic circuits and includes an electron resonance and a positive hole resonance, for which the generation condition is changeable in response to a mole fraction of material of the emitter layer. Such an RHBT, unlike a prior RHET, can be made to operate satisfactorily at normal ambient temperatures with adequate current gain.

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IPC 8 full level  
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**US 60101190 A 19901022**; DE 3650630 T 19861202; EP 86309383 A 19861202; JP 27080385 A 19851203; KR 860010328 A 19861203; US 14840293 A 19931108; US 65916291 A 19910222